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Exploiting Metadata of Absent Objects for Proxy Cache Consistency

Jooyong KIM  Hyokyung BAHN  Kern KOH

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Summary:
Caching at the Web proxy server plays an important role in reducing the response time, the network traffic,
Web servers. Many recent studies have proposed and examined the replacement and consistency policies fo
cache, which plays a central role in the performance of caching components. For better performance, they c
metadata of Web objects, such as the reference count, reference time, and modification time information of
to estimate the re-reference likelihood and freshness of the objects. However, all of these known to the auth
metadata only when the actual object is in the cache. We observed from various proxy traces that about 20-
requests incurred only the validity checks of cached objects without transferring actual objects from the pro
case, only the metadata are necessary at the proxy server. This paper proposes a proxy cache consistency po
metadata for absent objects. These include the time information of evicted objects from the cache and
header-only replies from Web servers. Trace-driven simulations with public proxy cache traces show that c
the response time and the number of connections to Web servers significantly.